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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,959	06/23/2003	Chang-Hyeon Lee	050324-1321	8906

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EXAMINER

CUNNINGHAM, TERRY D

ART UNIT	PAPER NUMBER
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2816

DATE MAILED: 09/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/601,959

Applicant(s)

LEE ET AL.

Examiner

Terry D. Cunningham

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-25, 28-30 and 32-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-18, 20-24, 28-30 and 32-38 is/are rejected.
- 7) ☒ Claim(s) 19 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02 August 2004 has been entered.

Summary of changes in this action

- I. The objection to the drawings has been overcome responsive to the drawing amendment filed 02 August 2004.
- II. The enablement issues have been overcome responsive to the amendment.
- III. Due to the claim amendments, new rejections under 35 U.S.C. § 103 are included herein.

Claim Rejections - 35 USC § 112

Claims 33-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 33, there is no support for the recited "first cascode transistor pair".

Claims 34-37 are rejected as including the indefiniteness discussed above with claim 33.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 28-30, 32-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawasaki (USPN 5,955,904).

With respect to claims 30, 32-38, Kawasaki discloses, in Figs. 3, 4 and 5 (note, Figs. 4 and 5 are elements 42 and 52, respectively, of Fig. 3), a circuit comprising: “a first transistor pair, comprising a first switching transistor (50) and a first complementary transistor (51)”; “a first control signal (CLK)”; “a constant reference voltage (Vref)”; “a second transistor pair, comprising a second switching transistor (63) and a second complementary transistor (64)”; “a second control signal (CKE)”; and “a first current sink (52)”, all connected and operating similarly as recited by Applicant.

With respect to claims 28-30, clearly the above circuit to Kawasaki will provide the recited method.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 8-11, 13-18, 20-24, 28-30 and 32-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (USPN 5,889,437) in view of Abdi et al. (USPN 5,722,052).

With respect to claims 1, 8-11, 13-18, 20-24, 30 and 32-39, Lee discloses, in Fig. 7, a circuit comprising: “a first input stage” having “a first input transistor (M41)”, “a first complementary transistor (M42)”, “a first discharging transistor (M45)” and “a charging

transistor (M47)”; “a first control signal (UP)”; “a first reference signal (\overline{UP})”; “a second input stage” having “a second input transistor (M43)”, “a second complementary transistor (M44)”, “a second discharging transistor (M46)” and “a charging transistor (M50)”; “a second control signal (DN)”; “a second reference signal (\overline{DN})”; “a loop filter (R1, C1, C2)”; and “a second output terminal (Vo-)”. The reference to Lee discloses using complementary signals (UP, \overline{UP} , DN, \overline{DN}) rather than using a single-ended signal and constant reference voltage. However, it is notoriously well known, as is disclosed by Abdi et al., complementary signals and a single-ended signal with a constant reference voltage (e.g., VREF) for use with a comparator are art-recognized equivalents and can be used in a charge pump circuit. The configuration of a single-ended signal and constant reference voltage is well known as having the advantage of being usable with a phase detector that generates a single-ended signal. Therefore, it would have been obvious for one skilled in the art to use a single-ended signal and constant reference voltage in place of the complementary signal for the expected advantage of being usable with a single-ended phase detector.

Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (USPN 5,889,437) in view of Abdi et al. (USPN 5,722,052) and Ohashi (USPN 6,215,336).

With respect to claims 2-7, in the above combination of Lee in view of Abdi et al., there is no express disclosure as to how the constant voltage VREF is generated. However, it is notoriously well known, such as disclosed by Ohashi that a common way of generating such a structure is to merely use a resistor divider. Such an arrangement has the advantage of having simple structure while still maintaining a stable voltage due to the high input impedance of the comparator. Therefore, it would have been obvious for one skilled in the art to use a resistor

divider to generate VREF in the above combination of Lee in view of Abdi et al. to obtain the expected advantage of simple structure.

With respect to claims 28 and 29, clearly the above combination of Lee in view of Abdi et al. will provide the recited method.

Claims 19 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terry Cunningham whose telephone number is 571-272-1742. The examiner can normally be reached on Monday-Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TC
September 13, 2004


Terry D. Cunningham
Primary Examiner
Art Unit 2816